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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/566,663 | 01/31/2006 | Simon Carlile | 16794-003us1/126670 | 6043 |

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| EXAMINER |
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ENSEY, BRIAN

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| ART UNIT | PAPER NUMBER |
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2615

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| MAIL DATE | DELIVERY MODE |
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09/08/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/566,663 | Applicant(s) CARLILE ET AL. | |
| | Examiner Brian Ensey | Art Unit 2615 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 3,5,6,9,12-14,17-21 and 23-32 is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7,8,10,11,13,15 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/31/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because all the drawings are dark and some features are difficult to identify. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: See item 42 on page 8, line 20, page 9, lines 2 and 25 and page 10, line 15. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

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The disclosure is objected to because of the following informalities: There are several instances of step mislabeling, for example: See page 9, line 25 "at step 34" should read "at step 36" and "at step 42" should read "at step 40".

Appropriate correction of these errors and further errors within the specification is required.

Claim Objections

Claims 28 and 31 are objected to because of the following informalities: Claim 28 reads "The equipment claim 22 in which ...". The Examiner interprets this to mean "The equipment of claim 22 in which..." Claim 31 reads "The equipment of any one of claims 22 which includes...". The Examiner interprets this to mean "The equipment of claim 22..." Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 4 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "little, if any" in claims 1, 4 and 22 is a relative term which renders the claim indefinite. The term "little, if any" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be

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reasonably apprised of the scope of the invention. The Examiner recommends changing the term to “by minimizing or eliminating”.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 2, 10, 15 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Allegro et al. U.S. Patent Publication 2004/0175010.

Regarding claim 1, Allegro discloses a method of enhancing sound heard by a hearing-impaired listener, the method comprising: monitoring the sound in an environment in which the listener is located; and manipulating the frequency of high frequency components of the sound in a high frequency band, with little, if any, distortion to components of the sound in a speech

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frequency band, to enhance spectral cues to aid the listener in sound externalisation and spatialisation (See Fig. 1 and paragraphs 0016 and abstract).

Regarding claim 2, Allegro further discloses manipulating the frequency of the high frequency components by a technique selected from the group comprising: compressing the components across a frequency range, shifting the high frequency components to lower frequencies (See Fig. 1 and paragraphs 0016 and abstract) and combinations of the foregoing.

Regarding claim 10, Allegro further discloses when effecting the manipulation of the high frequency components, at least partially preserving a harmonic relationship between the components (See abstract).

Regarding claim 15, Allegro further discloses manipulating the frequency of the high frequency components by signal amplification (See paragraph 0010).

Regarding claim 16, Allegro further discloses applying the signal amplification so as to maintain consistent relative gain across frequency for the high frequency components (See paragraphs 0016 and 0031).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allegro et al. in view of Kates U.S. Patent Publication 2003/0072464.

Regarding claim 7, Allegro discloses a method as claimed. Allegro further discloses disclose manipulating the high frequency components by first transforming a sound signal to the frequency domain (See Fig. 2). Allegro does not expressly modifying the frequency domain representation using one of a mapping and a warping technique. However, the use of warping to modify frequency domain spectrum of speech signals is well known in the art as taught by Kates (See abstract). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the well know warping technique as taught by Kates to improve ease of listening and speech intelligibility (See Kates abstract).

Regarding claim 8, Allegro discloses a method as claimed. Allegro does not expressly disclose manipulating the high frequency components in the time-domain using at least one of a time-domain filter bank and a resampling technique to shift and/or compress the high frequency components to lower frequencies. However, manipulating high frequency components in the time-domain using a time-domain filter bank to shift the high frequency components to lower frequencies is well known in the art as taught by Kates (See paragraph 0005). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the well know filtering technique as taught by Kates to improve ease of listening and speech intelligibility.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allegro et al. in view of Killion et al. U.S. Patent No. 5,144,675.

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Regarding claim 11, Allegro discloses a method as claimed. Allegro does not expressly disclose manipulating the high frequency components using a logarithmic compression technique. However, the use of logarithmic compression in hearing aids is well known in the art as taught by Killion (See col. 4, lines 33-62). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the well know compression technique as taught by Killion to accommodate transients without distortion (See Killion col. 4, lines 3-6).

Allowable Subject Matter

Claims 3, 5, 6, 9, 12-14, 17-21 and 23-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Ensey whose telephone number is 571-272-7496. The examiner can normally be reached on Monday - Friday 6:00 AM - 2:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Suhan Ni can be reached on 571-272-7505. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any response to this action should be mailed to:

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Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, Va. 22313-1450

Or faxed to:

(571) 273-8300, for formal communications intended for entry and for informal or draft communications, please label "PROPOSED" or "DRAFT".
Hand-delivered responses should be brought to:

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Randolph Building
401 Dulany Street
Arlington, VA 22314

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/Brian Ensey/
Primary Examiner, Art Unit 2615
September 4, 2008